1. Using the template method, convert 1011012 to its decimal equivalent.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1 | 1 | 0 | 1 |
| 25 | 24 | 23 | 22 | 21 | 20 |
| 32 | 16 | 8 | 4 | 2 | 1 |

32+8+4+1 = 45

1. Using the template method, convert 24710 to its binary equivalent.

(0 1 1 1 1 0 1 1 1 )2

256 128 64 32 16 8 4 2 1

## Using the extended template method, convert 247.87510 to its binary equivalent.

## (11110111.111) 2

## What is the binary number 1100111111 written in decimal?

## 83110

## Is it true that every number has a binary representation? And if so, is the binary representation of a number unique?

## Yes, and every binary representation is unique.

## What’s the largest base 10 integer that can be represented with 15 bits?

## 32767

## How many different patterns of 1 and 0 can be produced using 7 bits?

## 27 = 128 bit patterns

## How many different bits are needed to represent the base-10 number 1021?

## 10 bits

## Can math constant π be written in binary? State your reason.

## No, since it repeats infinitely and is an irrational number.

## How many bit patterns can be formed by 5 bits?

## 25 = 32 patterns

## Convert (65)7 to base-8 notation. (57)8

## 12. Convert (AB)16 to binary. (10101011)2

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